UGANDA PROTECTORATE

ANNUAL REPORT

OF THE

DEPARTMENT OF AGRICULTURE

FOR THE

Year ended 31st December, 1948

PRICE: Shs. 3/-

Published by Command of His Excellency the Governor

ENTEBBE
PRINTED BY THE GOVERNMENT PRINTER, UGANDA
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GPUP—978—685—5-50.

PREFACE

In previous years, the Annual Report of the Department has been published in two parts: Administrative and Experimental. This year, the report is being published in one part only in which all aspects of the work of the Department are covered. It is not, however, desirable in a report of this type to include details of experimental and research work and a brief outline only of such work is given. The full reports of the experiment stations and research stations of the Department for 1948 will be published in bulletin form at a later date.

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SECTION I.—GENERAL REVIEW

Weather

There was some delay in the onset of the spring rains which did not break until the second half of April, and this, following upon the partial failure of the 1947 autumn rains, resulted in the early part of the year being a period of considerable stress for all crops.

Spring crop planting was also delayed and crop prospects were not good. Fortunately, however, subsequent weather conditions were highly favourable, rainfall was good and well distributed and continued throughout the normal mid-year dry period in most areas. This to some extent compensated for the delay in planting spring crops, and grain crops in particular produced very satisfactory yields. Permanent crops also recovered well from the previous long dry spell and good yields were obtained.

Dry weather set in again during December and at the end of the year conditions were ideal for the ripening and harvesting of all crops.

Native Agriculture

Early in the year it became evident that the economic crisis with which the United Kingdom was faced, coupled with the need for the creation and the accumulation of wealth to meet the costs of increasing development and expanding social services, made it imperative to increase agricultural production of exportable crops by all practical means. To this end a close examination was made of the manner in which this could be done without, on the one hand, departing from the policy of producing and maintaining, as the first priority, adequate supplies of essential foodstuffs or, on the other hand, of depleting soil fertility.

Rather than embark on the large scale production of new crops, or on new schemes of problematical value, it was decided to concentrate on increasing production of those economic crops which had over a period of years established themselves as suited to the country and to the people. The emphasis was placed on cotton and to a less extent on oilseeds, principally groundnuts. During the war years and the years immediately following the war, conditions were such that there was a lessening of interest in the cotton crop and as a result annual production decreased. Part of the decrease has been due to increased production of other crops such as coffee and maize and part to a series of unfavourable seasons. These alternative crops have no doubt come to stay as permanent features of the agriculture of the country, and to the extent that they result in a more balanced economy they are to be welcomed, but it is essential that they

should not be permitted to replace cotton which is still the mainstay of the country. An intensive production drive was instituted having, as has been stated, increased production of cotton as the main objective and it was decided to concentrate not so much on obtaining an increased total acreage as, by the observance of simple cultivation rules, on the raising of yields per unit area. The campaign received the full backing of the Administration and of the African Local Governments concerned. Under the Native Authority Ordinance rules were made giving local authorities power to issue orders enforcing proper standards of cotton cultivation, while rules of a similar nature were promulgated under the Buganda Agricultural Law of 1946. Prices to producers for the principal economic crops such as cotton, coffee, groundnuts and tobacco were substantially increased and the guaranteed price to be paid to cotton growers for the crop to be marketed in the early months of 1949 was announced in March, 1948. In addition, as a further stimulus to production, a payment of Sh. 1 per 100 lbs. of seed cotton was guaranteed to each Native Administration in respect of the total quantity of cotton marketed in each such area, the funds so accumulated being earmarked to finance local development projects.

As a result of the measures taken the total acreage planted with cotton was increased from 1,036,829 acres in 1947 to 1,555,371 acres while the crop produced increased from 168,919 bales in the 1947-48 season to approximately 390,000 bales.

The general policy of the Department in regard to agricultural development in the Protectorate has two main aims:—

(*a*) to obtain a general improvement in the established farming systems with such modifications as are possible within the existing framework. In this sphere the principal objective is to get adopted as general practice those improvements which investigational work at department experiment stations has shown to be beneficial and practical of application by the general farming community. Such matters as early and better preparation of land, correct cultural methods for particular crops, the proper use of grass as a crop and for resting leys, the use of livestock as an integral part of the farming system and simple soil conservation measures fall within this category. Work of this nature is comparatively short term in its conception and execution

(*b*) to obtain information as to the practicability of introducing more modern systems of farming into African agriculture, implying the use of power drawn implements in place of the hoe, and the means whereby the capital required for such developments can be provided on adequate security to a primitive peasant farming community. In particular the economics of any such developments *vis-a-vis* hand cultivation need the closest investigation before they can be generally advocated. Development on these lines is obviously a long-term project the more so as they deal with matters of fundamental importance such as land tenure, land usage and land inheritance and other like sociological problems.

During 1948 the field staff of the department were more generally concerned with the comparatively short-term aspects of agricultural improvement and betterment referred to above and, in general, with the co-operation of the Administration, satisfactory results were achieved. Much, however, remains to be done before average yields of crops are raised to a level which we know can be obtained by the adoption of simple practices of good husbandry.

In regard to the long-term aspect the experimental tractor units referred to in last year's report provided valuable information as to the types of tractors and implements best suited to local crops and to local conditions and the economics of this type of farming and, it should be mentioned, they proved extremely popular among farmers in the areas in which they worked who found no difficulty in paying the scheduled hire charges. A considerable expansion of this side of the work has been planned for 1949 and the necessary orders for additional tractors and implements were placed during the year.

Non-Native Agriculture

Coffee

The crop, which is mainly *Robusta*, amounted to 3,591 tons and was marketed through the Non-Native Coffee Marketing Board. 2,558 tons were supplied to the United Kingdom Ministry of Food under the terms of the five-year contract which ends in 1952, the balance being 1,033 tons of undergrade coffee which was sold in auction on the Mombasa market. Free market prices remained high throughout the year and showed a very marked advance on the Ministry's contract prices.

Tea

Interest in this crop was maintained and further applications for planting licences were received. Twenty licences for a total of 6,548 acres were issued during the year which with licences issued up to December, 1947, brought the total licensed acreage to 18,485 acres. Tea seed was in very short supply due to the fact that countries which are participants in the International Restriction Scheme will not permit of the export of seed to East Africa. Internal East African consumption of tea has markedly increased during recent years in relation to production and due to the fact that overseas prices for tea were higher than internal prices, it became necessary to limit exports on a quota basis to retain sufficient manufactured tea to meet local consumption demands. In this connection it is of interest to record that East African tea consumption was two-and-a-half million pounds in 1939, a figure which had increased to over six-and-a-half million pounds in 1948.

Sugar

Production from the two estates, Lugazi and Kakira, was at a high level, 64,707 tons being produced compared with 56,918 tons in 1947. Of the total produced and the balance of production remaining from the previous year, 18,300 tons were retained in Uganda for local consumption,

29,900 tons were made available to the East African territories and 19,000 tons were exported to the Sudan and overseas.

SISAL

The one estate at Masindi Port continued production, 1,501 tons of fibre being manufactured.

PAPAIN

The high prices in overseas markets which this commodity commanded in 1947 encouraged several estates to embark on the cultivation of pawpaws and the production of papain. Approximately two hundred thousand pounds of dried product was manufactured during the year. With the fall in price from Shs. 19 per pound f.o.b. East African ports ruling in January to Shs. 11 per pound in December and with the prospect of a further decline in values, interest in this crop is diminishing.

Agricultural Industries

GINNERIES

Reference was made in last year's report to the general problem of the reorganisation of the cotton ginning industry and it was indicated that a Commission of Inquiry was to be appointed during 1948.

The Commission was appointed in May, the membership being: Sir Norman Whitley (Chairman) and Messrs. W. R. Palmer and J. C. Gardiner. The report of the Commission was published in October. The Commission made a number of recommendations designed to improve the organisation for the marketing of raw cotton by producers and the prevention of malpractices. The majority of these recommendations were accepted by Government. The Commission recommended also a revision of the price formula governing the payments made to ginners for the buying and ginning of the cotton crop and the revised formula, with minor modifications, was applied to the 1948-49 cotton crop. Other matters dealt with by the Commission were the establishment of a Lint Marketing Board—to take over from the Cotton Exporters' Group, a body established under Defence Regulations—and the desirability of placing the existing ginners' zone pools on a statutory basis. It cannot be said that any appreciable advance was made during the year towards the general reorganisation of the ginning side of the cotton industry though, following the publication of the Report of the Commission, there was considerable discussion on this subject with those concerned.

In September an announcement was made by Government that approval had been given in principle to a recommendation by the Buganda Government that a portion of the Cotton Fund which had been made available to that Government should be used to finance the acquisition of a ginnery to be operated by African enterprise. Details as to the method of purchase and operation were examined but no final conclusion had been reached by the end of the year.

COFFEE CURING WORKS

The number of licensed curing works, handling the Buganda native *Robusta* crop, remained at seven. The Bugishu *Arabica* crop was as

heretofore produced and marketed under the Bugishu Coffee Scheme, the coffee being treated in the Nairobi mills of the Kenya Planters Co-operative Union in which organisation the Scheme is now a shareholder.

Oil Mills

There are now established in the Protectorate twenty-three mills for the production of vegetable oils. In view of the considerable disparity in overseas and local values for cotton seed, groundnuts and oilcakes, it was necessary to retain control over the oilmilling industry and the allocation of seed for crushing to the relatively large numbers of mills presented considerable difficulties in view of the comparatively limited demand in East Africa for the resultant oil and cake. The mills dealt with 6,000 tons of groundnuts yielding 540,000 gallons of oil and with 41,500 tons of cotton seed producing 833,000 gallons of oil plus cake. 8,000 tons of cake were purchased by Kenya for stockfeed, the remainder being shipped to the United Kingdom Ministry of Food. The bulk of the cotton seed oil was purchased by the East African Industrial Management Board.

Marketing and Price Assistance Funds

By resolution of Legislative Council in June it was decided that the Cotton Profits and Hard Coffee Funds should be closed as at the 30th September and that the monies standing to the credit of the Funds as at that time should be applied as follows:—

	£
Price Assistance Fund	
Any part of which may be available for allocation to other objects at the discretion of such marketing boards or other authorities as may be set up in respect of the Cotton and Hard Coffee industries	3,925,000 (A)
Cotton and Hard Coffee Development and Welfare Fund	
Central Food Storage	100,000
Agricultural loans; machinery and plant	50,000
Co-operative Societies—loans	100,000
Land Bank and Building Society	500,000
African Housing	500,000
Grants to Native Administrations from Coffee Fund	250,000
Grants to Reserve Fund for Post-War Development schemes and general Social Services including community centres	4,625,000
Reserve for projects outside Development Plan (not necessarily Government)	500,000
Total ...	£10,550,000

Note: A—plus any balance available.

It can be said that the cessation of the war brought but little reversion to pre-war free trading conditions, the purchase overseas of commodities such as cotton and coffee by Uganda's principal customers remained in the hands of the United Kingdom Ministries of Food and Supply and the Government of India who required bulk sales. This in turn has necessitated the retention in the Protectorate of centralised selling agencies competent to negotiate overseas sales on behalf of producers. The recent economic crisis stressed the need for the retention of the war-time policy of planned agricultural production which, under Uganda conditions, can best be effected through the medium of adjustment and correction of

producer prices for each primary commodity. The policy of producer price fixation is therefore based on the following considerations:—

(*a*) the desirability of guaranteeing producer prices well in advance of the marketing season,

(*b*) the need to ensure to producers a reasonable return and a fair profit,

(*c*) the desirability of avoiding any marked degree of inflation,

(*d*) the necessity for the accumulation of funds for the general post-war development of the Protectorate, and

(*e*) the need for the creation of price assistance funds to be used to supplement producer prices when overseas prices fall to more normal and to possibly uneconomic levels.

It will be noted that the breakdown of the Cotton Profits and Hard Coffee funds as detailed above fulfils these conditions and it should be noted also that it would be impossible to maintain the system of advanced guaranteed producer prices—a system well liked by the African farmer—without the backing of a reserve fund such as the Price Assistance Fund.

As in previous years overseas marketing of cotton was undertaken through the Cotton Exporters' Group organisation which also undertook the marketing of a portion of the Kenya and Tanganyika crops. Arrangements for the sale of the 1948-49 crop were concluded by the end of the year, 100,000 bales being sold by auction on a free export market. Of the remainder (approximately 300,000 bales) two-thirds will be sold to India and one-third to the United Kingdom Raw Cotton Commission. The average price realised for the whole crop was approximately 26·8 pence per pound of lint f.o.b. Mombasa for the variety B.P.52, with price differentials for other growths. The prices obtained showed a substantial margin over the guaranteed price to growers and, after allowing for buying, ginning and marketing costs there will be an addition to the Price Assistance Fund of some £4,400,000 to which must be added a profit of approximately £500,000 from sale of cotton seed.

Despite the large cotton crop from 1948 plantings, shortage of storage and railway difficulties, marketing proceeded smoothly and by careful planning by the Uganda Loading Committee in co-operation with the Railway Administration the evacuation, not only of cotton and cotton seed, but of other crops destined for markets outside Uganda was carried out satisfactorily.

Primary marketing of maize and groundnuts was undertaken through the various cotton ginners' pool organisations which act in this respect as buying agents for the Tripartite Produce Agency which in turn handles these crops on behalf of the Government control. The system is not altogether satisfactory and plans are in hand for the erection of godowns throughout the Protectorate which can be rented to cotton buyers or leased to approved buyers of other crops when not required for the former purpose.

Marketing of the large Buganda *Robusta* native coffee crop proceeded without incident under the direction of the Coffee Control which during the year handled 31,415 tons of coffee. The Bugishu *Arabica* coffee crop was marketed by the Bugishu Coffee Scheme under the direction of the Managing Agents.

The marketing of minor crops continued to be effected in co-operation with the Director of Supplies.

Approximately three million pounds of leaf tobacco were sold by producers, the bulk being fire-cured leaf grown in Bunyoro District. Licences to buyers were issued under the Native Produce Marketing Ordinance, most of the crop being purchased by local manufacturers of tobacco and cigarettes. A small export quota of 200,000 pounds of leaf was made available to four other licensees. The Kigezi District production of nicotine tobacco was sold to the Kabale factory of Kigezi Industries Limited for the production of nicotine and nicotine sulphate.

Soil Conservation

Steady though not spectacular progress can be reported from most areas. The Buganda Government Soil Conservation Rules introduced in 1947 gave effective support to anti-erosion propaganda and there was a considerable increase in the use of the various measures advocated. Of these the making of contour bunds, often planted with *Paspalum* grass, was outstanding, particularly in the South and East of Mengo District and in parts of Mubende District. The breaking up of large cattle herds continued and the use of kraal manure on plantain gardens and on coffee plots gained in popularity; instances of cattle owners selling manure to non-cattle owners were noted.

The making of compost from township refuse was continued in Kampala and was extended to Entebbe, a total of 1,700 tons was distributed to African farmers in the vicinity of these townships in addition to 2,300 tons of coffee husks. Strip cropping, well established in Teso District, made very considerable progress in the Lango and Acholi Districts, in the latter almost the whole of the cotton crop was planted on the strip system. Unfortunately, the value of grass strips is not so appreciated for crops other than cotton and the problem is now to get the strips maintained throughout the cropping cycle.

It can be said that the Kigezi District now provides one of the most spectacular examples of district-wide soil conservation work to be found probably anywhere in Africa, and alternate strip cultivation on the contour has now become an integral part of the life of the District.

Such matters as the encouragement of contour planting, the prevention of overstocking, the closing of overgrazed lands, the provision of additional water supplies and the control of erosion from roads by the roadside planting of grass all received attention.

In the Kigezi resettlement area the total number of persons in the area at the end of the year was 10,000, of whom 4,200 were moved into the area during the year. An unfortunate outbreak of malaria during the latter part of the year held up progress but this has now been dealt with and resettlement is being resumed.

Soil Investigations and Fertility Problems

Experimental work on manures was concentrated mainly on phosphatic fertilisers with and without nitrogen, trials being laid down at fourteen centres. This was a continuation of the work initiated in 1946. It can be

said that to date the greatest responses have been obtained with nitrogen manuring, that the response to potash has, with one exception, been nil and that the responses to phosphate have been almost universally low. In only three instances have yield increases over fifteen per cent. with phosphate been recorded, two with double superphosphate and one with soda phosphate. With crude Uganda rock phosphate responses were of the order of six to seven per cent. A paper "Fertiliser Studies on Uganda Soils" summarising all work done to the end of 1948 has recently been prepared for publication in the *East African Agricultural Journal* by Dr. G. ap. Griffith and Mr. H. L. Manning the two officers responsible for the conduct of the investigations.

Increased tea planting has led to a considerable number of requests for pH determinations. In common with experience elsewhere it has been found that tea in Uganda is intolerant of a high pH and, as a general rule, a pH of 6·0 seems to be the upper limit under local conditions though the persistence of such a pH to depth in the profile possibly needs to be taken into account.

A systematic study of soils from the main cotton areas has been started. The results reveal a very wide range of physical properties and of nutrient content and the enquiry promises interesting and useful results.

Indications have been obtained that important accumulations of nitrate nitrogen occur seasonally in soils under Uganda conditions and work on this problem, which has an important bearing on the nitrate status of newly opened grasslands, and time of planting after the resting grass ley has been cleared and cultivated, is in progress mainly at Kawanda and Serere.

There was a considerable expansion during the year of work on plant and animal products including butterfat determinations in connection with cattle breeding and improvement work, determinations of fixed oils as an aid to selection with such crops as sunflower, linseed and soya bean, investigation of the nicotine content of various strains of high nicotine content tobacco and pasture grass analyses.

Animal Husbandry

The programme of work in connection with both livestock improvement and the inter-relationship of stock and arable farming has been continued at all main experiment stations. Investigational work in Uganda has shown that everything is to be gained by the adoption of mixed farming methods. Results are now being introduced into the field through improvement areas in selected localities which have as their object a practical way of demonstrating to African farmers on their own holdings the benefits to be derived from proper management of cattle including supervision, housing and calf rearing, the use of home-grown feeds and pasture leys, the selection of the most productive animals and the utilisation of cattle manure on annual or permanent crops.

The original livestock improvement area at Ngogwe in Buganda was started by the Veterinary Department but it quickly became apparent that to obtain full benefits from the scheme the agricultural aspect must also be taken into account and accordingly the Agricultural Department

is now working in very close co-operation with the Veterinary Department to bring about a full farming improvement scheme in this area. The results achieved to date are most encouraging and the farmers concerned now realise the economic benefits of the farming methods advocated.

In addition to the assistance given to individual farmers in the area by the extension staff of both departments—and the success achieved can be largely attributed to the individual approach and the winning of confidence—a small experimental sub-station has been opened at Kagongo for the carrying out of simple trials and demonstrations and local farmers are encouraged to regard this station primarily as their own experimental farm and to make suggestions for the running of it.

Animal husbandry and livestock improvement is now an integral part of the work undertaken at all first order stations of the Department and as it is essential that there shall be an established and continuous policy for this long-range and complex work the Agricultural and Veterinary Departments are working in unison, through the medium of an Animal Husbandry Committee fully representative of both Departments, in order that there may be a broad Protectorate policy. It is an established fact that the indigenous cattle in their existing state are inefficient producers of both meat and milk but it is now obvious that by careful selective breeding within the indigenous breeds together with better standards of management and feeding the productivity of these animals can be progressively increased. It is now the accepted policy to endeavour to effect improvements along these lines, rather than to attempt to bring about what might appear to be a more rapid method of up-grading by the introduction of European breeds for crossing purposes. Although it is not to be expected that there will be spectacular improvements from one year to another, nevertheless it is interesting to record for instance, that at Serere, where in 1946 only two cows gave milk yields in excess of 200 gallons, in the year under review 15 cows gave over 200 gallons each and the best gave 304 gallons in 274 days in addition to feeding her calf. This steady improvement is attributed partly to breeding and partly to improved feeding and management. In addition to the purely productive aspect, butterfat testing is also being undertaken and the following summarises the average results obtained from the Kawanda herd during the year:—

Month of Lactation	Pail-fed		Calf at Foot	
	Average % Fat	Average Daily Milk Yield	Average % Fat	Average Daily Milk Yield
		lbs.		*lbs.*
1st Month	5·3	7·3	3·5	6·1
2nd Month	6·0	7·2	4·5	6·7
3rd Month	7·1	5·4	4·9	6·0
4th Month	7·3	4·2	5·0	4·8
5th Month	7·5	3·7	5·9	4·0
6th Month	8·0	2·6	6·1	4·2
7th Month	7·0	1·5	4·5	2·9
8th Month	9·0	1·8	6·8	3·1
Averages ...	7·2	4·2	5·3	4·5

The above figures are taken from the average of 15 cows with calves at foot and of 10 cows whose calves are pail fed.

Work in connection with nutrition now indicates that in many areas in Uganda better results are obtained from the supplementary feeding of carbohydrates such as cassava and sweet potatoes than from protein concentrates. This is important from the point of view of the African farmer since the majority of his home-grown feeds are of a carbohydrate nature. Apart from both investigations and demonstrations in connection with cattle, work regarding the improvement of poultry and pigs continues, but in this case standards are being raised by the use of imported stock of European breeds. In areas where the tsetse fly and the stomoxys biting fly limit the keeping of cattle encouragement is being given to the orderly keeping of pigs primarily to provide meat as an article of African diet and to utilise what would otherwise be waste products of farm and home.

Pasture Work

Any sound system of arable farming must in future embrace a period when a proportion of the arable land will be resting from cultivation and it is essential to ensure that not only will land so rested regain and improve its fertility but also that it can be put to its maximum economic use in the production of livestock products. Accordingly pasture investigation work has proceeded along the following broad lines: to discover the best grass or mixture of grasses suitable for a short-term ley, to investigate the management of both seeded leys and natural regeneration from the point of view of soil fertility and the production of stock products and to improve the management of permanent grazing on uncultivable land.

To date *Chloris gayana* has been chosen as the most suitable grass for temporary leys over the Protectorate generally but in the higher regions of Kigezi good results are being obtained from a mixture of *Chloris* and *Bromus marginatus*. Elsewhere attempts to establish grass mixtures have been disappointing. While it should not at present be assumed that *Chloris* will be the only suitable ley grass there is no doubt whatsoever that for a commencement it will fulfil our requirements from both a grazing and soil rejuvenation aspect.

In the higher rainfall areas where elephant grass is indigenous resting land reverts rapidly to this grass to a greater or lesser degree under the traditional system of permitting natural regeneration and it performs a most useful purpose in the restoration of soil fertility. It is, however, a grass which owing to its strong growth is difficult to eradicate and remove when the land is again cultivated and in this respect it is wasteful of the time and effort of the cultivator. Further, although it is a grass which can produce heavy tonnages of green matter per acre under rotational cutting it has its disadvantages when used for grazing. These drawbacks are not associated with *Chloris* and accordingly it is now the policy of the Department to encourage the establishment of this latter grass wherever possible.

Much of the grazing and grass testing work over the last ten years has been designed to determine the effect of grazing on resting land as

determined by the yields of subsequent crops. Although it has yet to be shown that grazing as opposed to bush or ungrazed resting fallow increases subsequent crop yields it definitely does not lead to reduced yields and present indications are that careful grazing will give increased yields.

Trials comparing the effect of grazing against the effect of applications of farmyard manure as measured by subsequent crop yields when the land is opened up for cultivation have been in progress for eight years. Briefly, results indicate that farmyard manure gives the highest yields but that the increase does not pay for the extra cost of kraaling and stall feeding the cattle for prolonged periods throughout the day and transporting the manure to the land. It is therefore the policy to endeavour to get African farmers to graze their resting land under a proper ley management system.

Irrigation

At present there are no major irrigation schemes in the Protectorate but during the year arrangements were made for a party of four Arabs to come to Uganda for a period of two years with the object of investigating the practicability of introducing Aden methods of irrigation by flood water control into selected areas of Karamoja. The party arrived in October and after making preliminary surveys, training of oxen and the making of simple equipment, the preparatory work on the bunding of the first series of fields was completed before the end of the year. The sites selected for the preliminary trials are at Ngiminito and Lotome some 39 miles and 20 miles respectively south of Moroto.

Agricultural Education

With the completion of the ex-soldiers' courses at the end of 1947 and as the permanent buildings erected by the Civil Reabsorption Board have been handed over for use by the department it has now been possible to resume and expand the agricultural education programme at Serere and Bukalasa. Unfortunately at Ngetta the training centre had to be kept on a care and maintenance basis because of lack of staff.

In addition to the normal courses for Makerere students and apprentice Assistant Agricultural Instructors, short courses were held at Serere and Bukalasa for cultivators' groups, vernacular teachers (both men and women), and prison warders, while refresher courses were also provided for Assistant Agricultural Officers and Agricultural Instructors. The following is a summary of the number of persons who attended these courses in 1948.

	Makerere Students	Apprentice Instructors	Cultivators, Teachers and Prison Warders
Bukalasa	1	36	96
Serere	11	20	634
TOTALS ...	12	56	730

The Department also played a major part in the three eight-weeks comprehensive courses for chiefs organised by the Provincial Administration which were based on Bukalasa. Lectures were given by the

administrative, field and specialist staff of the Department and much time was devoted to practical work. Help and advice of an agricultural nature was also given to the domestic science classes held by the Education Department at Bukalasa.

Although regular agricultural courses are not held at other experiment stations, nevertheless an endeavour is made to utilise these farms for educational and demonstration purposes. For example, during the year a short course was organised at Kachwakeno in Kigezi which was attended by fifty teachers from schools throughout the district.

In order further to stimulate the adoption of sound farming practices, especially from the soil conservation point of view, competitions continued to be organised in several districts on an inter-gombolola (sub-county) basis. These competitions have developed a keen sense of friendly rivalry and results have been most encouraging.

Increasing attention has also been paid to the use of agricultural propaganda through the medium of wide distribution of posters and hand-bills and by working in close co-operation with the Department of Public Relations and Social Welfare. The publication of numerous articles in the vernacular press, the issue of monthly news letters to chiefs by the staff in all districts, demonstrations, lectures and visits all played a part in the general propaganda plan designed to increase productivity and attain a higher standard of crop and animal husbandry.

Pests and Diseases

There were no outbreaks of major importance and fortunately the territory remained free from locust invasions. *Lygus* and Blackarm particularly on early planted cotton in parts of the Eastern Province caused some damage and loss of crop while the ravages of the banana weevil in neglected banana gardens continued to cause considerable damage. Arrangements are in hand to import parasites of this pest which it is hoped will result in a degree of biological control. The coffee berry borer continues to cause damage in localised coffee areas but the extent of infestation can be kept under control by proper cultural methods.

Experiment Stations

As in most African territories there are in Uganda several main ecological zones with their attendant transitional zones and in order to investigate not only the general fundamental or basic agricultural problems but also the more local problems which the different zones present, experiment stations have now been established throughout the Protectorate with a view to covering as wide a range of agricultural conditions as possible. Two of these stations are principal or first-order stations at which are based the specialist staffs of the Botanical, Chemical and Entomological sections of the Department, and where both basic and general problems affecting the land, crops and stock are dealt with. Closely linked with these two research stations are three second-order or sub-stations where again problems concerning general land use, including crops and livestock, are investigated and a further sub-station (Bugusege) is established in Bugishu

which deals with *Arabica* coffee. In addition there are five smaller or third-order sub-stations which deal mainly with local problems. All stations are designed to demonstrate to the African farmer those practices which are considered to be most desirable. The following is a list of the stations referred to indicating where they are situated and the ecological zones in which they lie:—

Name	District	Ecological Zone
FIRST-ORDER STATIONS		
Kawanda	Mengo ...	Elephant grass/rain forest.
Serere	Teso ...	Scattered tree/short grass.
SECOND-ORDER STATIONS		
Bukalasa	Mengo ...	Transitional between elephant grass and short grass.
Ngetta	Lango ...	Scattered tree/short grass.
Kachwekano	Kigezi ...	Highland grassland.
Bugusege	Bugishu ...	Transitional between highland grassland and short grass.
THIRD-ORDER STATIONS		
Kyembogo	Toro ...	Elephant grass/rain forest.
Bulindi	Bunyoro ...	Marginal elephant grass/rain forest.
*Buwunga	Masaka ...	Marginal elephant grass.
Kakumiro	Mubende ...	Transitional between elephant grass and short grass.
Kamenyamigo ...	Masaka ...	Elephant grass.

*This station is mainly devoted to work on "lunyu" soils.

The headquarters of the Laboratories Division of the Department is at Kawanda which is also the main experiment station serving Buganda and where the main lines of work are as follows:—

(*a*) Plant breeding and selection mainly in relation to cotton, coffee and food crops.

(*b*) Investigations concerning insect pests and diseases.

(*c*) Soil fertility investigations and fertiliser trials.

(*d*) Grazing and grassland experiments.

(*e*) Investigations into the development and utilisation of swamp land.

(*f*) Livestock improvement work.

(*g*) General agronomy investigations in connection with both permanent and annual crops.

(*h*) Trials with various types of tractors and implements to ascertain their suitability to Uganda crops and conditions and to find out the effects of mechanical cultivation on local soil types.

In addition and run in conjunction with the experiment station there is a seed farm, an area of 750 acres which serves as the first stage in the multiplication of improved varieties of cotton produced by the plant breeding section. Cotton so produced is grown by tenants under a system of strip cropping and it is interesting to note that the average yield of seed cotton produced on the farm was over 500 lbs. per acre.

Serere is the second of the first-order stations and serves a large area of both the Eastern and Northern Provinces. As at Kawanda, a great deal of the work is concerned with land utilisation and fertility problems and at this centre a number of long-term experiments have been established

for a number of years to ascertain the optimum rotation for areas of which Serere is typical. The main fertility experiment has been running for thirteen years and is now giving fairly consistent results. It has been shown that one year's rest in a five-year rotation is sufficient to restore fertility for the first subsequent cotton crop but that thereafter crop yields are in direct proportion to the length of the resting period, three years rest being better than two, which, in turn, is better than one year's rest. It has been shown further that with the exception of early planted cotton grown after one year's rest all crops show a marked response to comparatively small dressings of manure applied up to two years previously. There are indications also that careful grazing of the resting land improves subsequent crop yields.

Grazing and grassland investigations have been continued on two main lines, firstly to find the best grass or mixture of grasses suitable for a three-year ley and, secondly, the correct system of pasture management of both short leys and permanent grazing areas. As a result of previous work, where every known local grass was tried both alone and in mixture, *Chloris gayana* (Rhodes grass) was selected as being the most promising. A series of trials have also been laid down to compare the grazing value of Rhodes grass with natural regeneration.

SECTION II.—FOOD CROPS

General Review

EASTERN PROVINCE

Towards the end of 1947, the food position in several areas was far from satisfactory. This was due to the autumn planted sweet potato crop having failed through inadequate rainfall and the lack of growth of the cassava crop for the same reason. The delay in the onset of the 1948 spring rains made the food position more serious, as successive plantings of *Eleusine* millet failed and a late harvest was unavoidable. Also, the extended dry season was responsible for the loss of a high proportion of the sweet potato vines and despite plantings on swampsides and in seepage areas, supplies of planting material were inadequate and general planting was not possible until the second half of the year. As a precautionary measure against food scarcity therefore, arrangements were made for the importation of maize meal from Kenya but in the end approximately 200 tons only were required. The export of pulses, rice and grains was also prohibited as an additional precaution against serious food shortage.

In order to restore food stocks to a satisfactory level, a determined effort was made during the second half of the year to increase the acreage under cassava and sweet potatoes and to that end powers available under the Native Authority Ordinance were used for compulsory planting of these crops. In addition, all available stocks of mosaic resistant types of cassava were distributed to growers which on account of their higher yielding capacity contributed by no little extent to increased production of this

crop. The favourable weather conditions during the second half of the year resulted in satisfactory growth and establishment and at the end of the year it was estimated that the total acreage under cassava was some 56,000 acres greater than in the previous year and 20,000 acres greater in the case of sweet potatoes. The food position as regards root crops was therefore very considerably improved but despite a good millet crop it was less satisfactory in respect of grain reserves which were in general very low in all areas. On account, however, of the large area planted with cotton during the year, it is anticipated that it will be possible to increase the finger millet acreage to a considerable extent in 1949 and every effort will be made to do this in the interests of provincial grain reserves.

Northern Province

At the end of 1947, food reserves were adequate in all districts except Karamoja, a pastoral area in which crop production is still in its infancy. The delayed rains of 1948 put a severe strain on the reserves but actual scarcity was confined to local areas in Lango District, and in Karamoja, necessitating the importation of small quantities of maize flour from the East African Cereals Pool. All spring crop planting was later than normal but as weather subsequent to planting was generally favourable, yields were satisfactory in most areas. Both finger millet and sorghum, despite the need for repeated sowings and wet weather during the harvesting period, yielded well and made substantial contributions towards the replenishment of granaries. The cultivation of mixed beans was increased to a considerable extent and renewed interest in cassava planting was taken in many areas, particularly in Lango District, on account of the prolonged drought and its accompanying food scarcity. Despite already abundant reserves of cassava, the West Nile District increased the acreage under this crop substantially and this district is now in a position to supply other less fortunate areas in the Northern Province in times of scarcity. As in the Eastern Province there was an acute shortage of sweet potato slips for planting and establishment of the crop was delayed considerably in consequence. By the end of the year, however, satisfactory acreages had been achieved in all districts except Acholi where the apparent reduction of acreage of this crop and also of cassava was somewhat disquieting and gave rise to fears that the district would not weather the dry season of 1949, without assistance. Up to the time of writing, however, the district has succeeded in remaining self sufficient as regards food supplies and importations of food are not likely to be required.

Western Province

Food production was maintained at a high level and at no time during the year was there any real scarcity of food in the districts. Rainfall was not altogether satisfactory either in amount or distribution, but the 1947-48 dry season was not so severe as in the other Provinces. Satisfactory acreages of grain crops were sown and good yields were obtained, increased cultivation of root crops was general and in the southern area of Toro District, there was a considerable surplus production of cassava which was sold to tea-estates for labour rations. Surplus beans were also

produced in this district which were disposed of similarly. In Kigezi District, production of English potatoes, which are a local foodstuff in that area, was increased and exports on a considerable scale were made at Kampala. This district also produced surplus beans and field peas for export as also did Ankole District. At the end of the year, the food position in the Province was more satisfactory than it has been for several years, with good reserves of food both in the ground and in the stores and it was therefore able to face the prospect of the 1948-49 dry season with equanimity.

Buganda Province

There were local food shortages during April and May in the urban areas of the Province, particularly in Kampala. These areas rely largely upon outside supplies of food and the prolonged dry season was responsible for some reduction in the surpluses which normally contribute to these supplies. Elsewhere, food was adequate throughout the year.

Planted acreages of root crops were satisfactory although at one time it was thought that cassava plantings would be reduced on account of the large acreage of land planted with cotton. Fortunately, however, this fear was not realised and a satisfactory acreage was ultimately obtained.

Production of groundnuts and beans was substantially above the average for several years. These two crops are primarily food crops in Buganda and increased production was not reflected in sales. In the case of beans, sales were approximately half those of the previous year and as yields were normal, this indicated a considerable increase in domestic consumption.

Plantains, which are still of considerable importance in Buganda as a food crop, despite competition from sweet potatoes and cassava and the depredations of the banana weevil, were favoured by the good rains during the latter half of the year, and yielded well. There was some indication of improved cultural practice becoming more common in consequence of departmental encouragement and advice and in view of the heavy demands on land area made by the crop, this tendency towards more intensive methods of cultivation is gratifying. Increasing pressure on the land in Buganda may well accelerate this tendency in the future except in areas where the plantain has developed into an economic crop and is grown primarily for sale to urban areas. Weight for weight, either cassava or sweet potatoes give a much greater return per unit area except possibly where the plantain is grown under very favourable conditions of soil and climate. Its persistence therefore in the farming systems of Buganda may possibly be explained largely by its long established traditional position, sentiment and the need for plantain leaves in the household cookery of the Baganda.

Food Crops—Investigational

In the past the main work in connection with food crops of major importance has had as its object the production of early maturing, heavy yielding and disease resistant varieties suitable for the varying conditions

of the Protectorate and to this end the work has proceeded along two main avenues:—

(*a*) trials of introduced varieties and the selection of those which have proved most successful, and

(*b*) plant breeding and selection.

The work relating to such crops as millets has produced beneficial results of economic importance but perhaps the most valuable work has been in the production of mosaic resistant varieties of cassava. The first phase of this work, that is to say the production of mosaic resistant varieties, has been successfully concluded and some six resistant varieties are now being bulked as rapidly as possibly at all stations and district plots for the issue of planting material to growers on a large scale.

During recent years maize has assumed a place of steadily increasing importance in the diet of the Uganda African and breeding work is now in progress to secure a quick maturing white dent maize which can be planted in the spring rains and harvested in time to allow cotton to follow on the same land later in the year.

SECTION III.—ECONOMIC CROPS

Cotton

GENERAL

The 1947–48 crop.—Fears of a partial crop failure as forecast in last year's report were unfortunately realised and total sales amounted to only 101,113 tons of seed cotton equivalent to 168,919 bales of lint. Acreage and production statistics of this crop are detailed in Appendix I and the following table provides a comparison with the cotton crops of the previous seven seasons together with that of the 1948–49 season:—

COTTON PRODUCTION—UGANDA: 1940–1948

Season	Estimated Acreage	Tons of Seed Cotton	Average Yield per per Acre	Average Price per 100 lbs.
			lbs.	*Shs. cts.*
1940–41	1,284,206	220,059	384	8 82
1941–42	1,287,256	140,697	245	7 68
1942–43	874,776	67,416	173	12 56
1943–44	1,233,801	112,011	203	13 18
1944–45	1,072,493	160,830	337	14 83
1945–46	1,145,568	135,525	265	16 40
1946–47	1,253,257	138,457	247	18 45
1947–48	1,036,829	101,113	218	20 42
1948–49	1,555,371	231,472	333	29 61

The f.o.b. Mombasa value of the lint from the 1947–48 crop was £7,457,617 but it is expected that the value of the 1948–49 crop will amount to approximately £17,000,000.

Disposal of the 1947–48 crop principally by bulk sales was continued and 56,258 bales were sold to the United Kingdom and 64,434 bales to the Government of India. Sales made by tender for export and disposal on the open market amounted to 47,966 bales. A small number of bales was destroyed by fire.

Prices to the grower for this crop were increased by Shs. 2 per 100 lbs. of raw cotton in all zones. Weather conditions were favourable for clean picking and in the absence of any serious Blackarm damage grade was good although quality was variable. Marketing proceeded smoothly and in consequence of the small crop, congestion at buying centres was conspicuous by its absence. The total value of the crop to the growers was estimated to be £2,398,816, the equivalent figure for the previous season's crop being £2,955,582.

In respect of the 1948–49 crop a Protectorate-wide campaign for a larger acreage and better yields through improvement in standards of cultivation, was instituted early in 1948. Earlier planting combined with better spacing were placed well in the forefront of the measures advocated together with better preparation of land, planting fewer seeds per hole, improved plot maintenance and finally complete harvesting of the crop. In addition to these field measures and in support of them, arrangements were made to inform growers before the start of planting of the guaranteed price payable for the crop. In consequence of the decision to relate seed cotton prices more closely to the anticipated export value of lint, it was possible to make an all-round increase in prices to the grower of Shs. 8 per 100 lbs. This increase gave a range of prices varying from Shs. 28 to Shs. 30 per 100 lbs. In addition, and in order to encourage the full co-operation of the various African Local Authorities in the drive for increased production, it was decided that each Local Authority would receive a bonus payment at the rate of Sh. 1 per 100 lbs. of seed cotton on all cotton marketed in their area. The funds thus derived from this payment are to be used to finance local development projects.

Weather conditions were generally favourable for planting and at no time was planting held up for lack of rain. Germination was good and plant stands were correspondingly satisfactory. There was a considerable improvement in the standard of spacing and the response to the drive for early planting was excellent and by the end of July approximately eight per cent. of the crop was in the ground. The total acreage was also very satisfactory and was estimated at 1,555,371 acres which is the highest figure reached for the past eight seasons and which has been exceeded only once in the history of the Protectorate. Weather conditions continued to be favourable during the growing period of the crop and high expectations of a record production were raised. In the Eastern Province, however, an outbreak of *Lygus* in July and August resulted in severe defoliation of the plants and a large proportion of the early crop setting was lost in consequence. Blackarm damage followed later in the year and it was fortunate that weather conditions continued to be favourable throughout the growing season as they permitted the plants to set and develop an excellent top crop which compensated to a large extent for the loss of potential crop incurred earlier in the season. Nevertheless, yields per acre were disappointingly low and growers did not reap the full advantage of their increased acreages. *Lygus* and Blackarm damage were less prevalent in the remaining Provinces and by the end of the year it was estimated that the total crop would reach and possibly exceed 350,000 bales.

Cotton Seed Distribution

The major distribution of seed for the 1948-49 season was made in connection with replacement of all existing seed stocks in Masaka District of Buganda. These had become badly mixed as it had been found administratively impossible to keep the area growing "Buganda Local" in that district, separate from the areas in which the varieties X3 and B.P. 52 were being grown. Complete replacement of seed stocks with B.P. 52 was therefore decided upon and this was done by the movement of the total seed requirements of Masaka District from the Bugerere segregated area. Normal seed movements in Buganda were also effected comprising movements to south-east Kyagwe from Bugerere and from south-east Kyagwe to other areas in the same county.

In the Eastern Province, there was no change in the varieties in the Busoga and Central zones and each area used its own seed for planting. In the North Teso zone, the variety B.181 was extended to the Usuku County area of the zone, so that the whole of the zone is now growing this variety except for a small area in the north for which B.181 seed was not available and which for the present is growing N.17. In the segregated areas of Teso District, seed of the variety S.5302, a Blackarm resistant strain of B.P.50 and increased in Mulondo during 1947, was distributed to include Kadunguru and it is hoped that enough seed of this variety will be available from the 1948-49 crop to serve the whole of the segregated areas in 1949.

The Obongi segregated area in West Nile District was also planted with S.5302 for increase with a view to its ultimate distribution throughout that district and throughout the remainder of the Northern Province in due course.

The Western Province continued to grow B.P.52 in all zones, but the Kyangwali area of Bunyoro was selected as a segregated area for future increase purpose and was flushed with seed of B.C.66, a variety of B.P.52 origin carrying a certain degree of resistance to Blackarm.

Cotton Investigational Work

Work on a survey of climate and disease and their relationship to cotton yields has been in progress for seven years. In brief it is considered that the success of the crop depends upon rainfall in the months of February, July, August and October. Rainfall in October is necessary to set the crop and July rainfall is critical for establishing the crop in the South only. August rainfall is responsible for the epidemic spread of Blackarm disease. February rainfall, which is most important, is believed to assist in the early rotting down of Blackarm infected debris from the previous crop.

The dependence of the crop upon acreage, sowing date and yield has been worked out. The benefit of an early planted crop is reflected in acreage rather than yield and the optimum sowing date for yield is now believed to be later than was at one time thought.

When, owing to favourable weather conditions during the critical months, the Blackarm epidemic is in check, the yield in certain areas is

more than doubled. In consequence the whole cotton programme at Serere has been re-cast to investigate means of reducing the incidence of Blackarm in the crop in the light of the now known reaction of the crop to conditions during the months noted above. With the assistance of Imperial Chemical Industries Limited an attempt is being made to eliminate or to drastically reduce the carrying over of the disease in the seed by physical and chemical means. An attempt is being made also to test the hypothesis of carrying over of Blackarm in debris from the previous crop. There is also a possibility of developments in connection with the commercial delinting of seed which may represent an important advance in the control of Blackarm in the subsequent crop.

Past work on the breeding of Blackarm resistant varieties was based first on Hansford's lesion count as developed in Uganda and then on Knight's leaf spot grade as developed in the Sudan. Certain anomalies have provoked a study of resistance to Blackarm under rainfall conditions (as opposed to the irrigated crops in the Sudan) which is giving results. The study has now probably explained the long standing riddle of "physiological" leaf reddening and it is favouring a revival of Hansford's criterion in a modified form as an effective breeding technique.

The structure of the plant has been studied in detail and it has been shown that Uganda has adopted a certain type of plant because of its ability to recover from the damage which it sustains almost every year. From this point of view the variety B.P.50 is especially promising in the Eastern and Northern Provinces.

Work on the genetics of resistance to *Verticillium* wilt disease and the transfer of resistance to the variety B.P.50 is being undertaken at Bukalasa. Work on red plant body and cluster habit, seed type and hairiness remains at Kawanda.

The variety B.P.52 is settled in Buganda for the time being. For the Eastern and Northern Provinces the variety B.P.50/S.5302 has now been accepted and after working on this at Serere, Ngetta and Bukalasa during the past season, reselection has now been concentrated at Bukalasa where the climate is best suited to this aspect of breeding. Work on the maintenance and improvement of the variety B.P.52 will now be transferred to the Empire Cotton Growing Corporation's station at Namulonge. Past efforts have undoubtedly improved both yield and uniformity of lint but unfortunately this work was undertaken in the belief that all B.P.52 was equally susceptible to Blackarm. It now appears that the basic stock contains a measure of resistance which is exploitable and as the improved stock has lost some of this resistance, further work is necessary before the seed of improved strains of this variety can be bulked and distributed.

It is known that the capsid bug, *Lygus*, annually causes a considerable reduction in the cotton crop though practical control measures suitable for introduction into native peasant agriculture are difficult to devise. The comparatively recent introduction and commercial production of new insecticides such as D.D.T. and Gammexane, however, may make control measures practicable if either of these insecticides can be proved to be effective against *Lygus*. This work, begun in 1947, reached the field stage

in 1948. D.D.T. wettable powder applied five times at weekly intervals from the time of the commencement of *Lygus* migration from the harvested grain fields produced a striking effect on early boll formation and low leaf damage. B.H.C. wettable powder was rather less effective and dusts of B.H.C. and D.D.T. less still. Work on this problem on a more extensive scale will be continued during 1949 including an investigation into the types of sprays and dusting apparatus suitable for use by individual cotton growers.

Coffee

NATIVE PRODUCTION

BUGANDA PROVINCE

There was some improvement in the standard of cultivation and preparation of *Robusta* coffee in Buganda in response to extensive propaganda directed towards that end. Planting of shade trees and the use of soil conservation methods on coffee plots increased and a large proportion of the crop was dried either on mats or on raised reed stands instead of on bare ground which has hitherto been normal practice.

The 1948 crop was heavy and in general was of good quality and the favourable weather throughout the second half of the year resulted in the prospects for the following crop also being good. Large sales were made and while buyers' returns are incomplete and unreliable, the total amount of coffee of all grades passed through the curing works, amounting to 31,142 tons, indicated that production during the year was a record, the highest previous comparative figure being 24,449 tons in 1946 as shown in the following table:—

NATIVE COFFEE PRODUCTION: 1941–1948
(not including Bugishu *Arabica*)

	1941	1942	1943	1944	1945	1946	1947	1948
Cured Coffee	*Tons* 17,747	16,099	17,717	11,856	16,083	24,449	17,238	31,142

These figures include the small production of the Western Province, except that of Bwamba County, and also a small proportion of native *Arabica* coffee but nevertheless they can be regarded largely as indicative of the big increase in production of Buganda *Robusta* coffee during the last three years.

Prices paid to growers during the year were based on fixed prices at all curing works as follows:—

Type	*Price*
	Shs. per 100 lbs.
Robusta Kiboko	19/– to 21/–
Robusta hulled	35/– „ 42/–
Arabica Kiboko	20/– „ 22/–
Arabica hulled	44/– „ 48/–

The value of the crop to the grower was estimated to total £1,400,000 approximately, the equivalent value of the cotton crop in Buganda being £1,100,000.

An important change was made in the system of distributing young plants from coffee nurseries during the year in that for the first time, plants were sold instead of being given to growers without charge. The price fixed was two cents per plant and although there was a marked decrease in the demand for plants, it is considered that this system is likely to encourage better planting and care of young plants than has been the case in the past and it is being persisted with for that reason. Despite the reduced demand, plants distributed were equivalent to 900 acres of new plantings bringing the total estimated acreage in the Province, as at the end of 1948, to 146,000 acres.

Western Province

In this Province *Arabica* and *Robusta* coffee are grown to an approximately equal extent, but except in Bwamba County of Toro District where *Robusta* is grown and in Ankole District, there is little real interest in the crop and the standard of plot maintenance is low. In the latter district, however, mulching and manuring of coffee is common and anti-erosion measures are increasing. There has been little increase in *Arabica* cultivation in recent years but more interest is being taken in *Robusta* coffee, and the acreage under that crop has been increased by approximately thirty per cent. since 1946, principally in Ankole District. The total production of the Province during the year was 183 tons of *Arabica* and 413 tons of *Robusta* hulled coffee and of the latter, approximately 300 tons were produced in Bwamba County of Toro District where there is a small but old-established *Robusta* industry. Prices payable for both crops were on a similar scale to those paid in Buganda and the combined value of the crop to the growers was £26,024.

Eastern Province

Bugishu *Arabica*.—Propaganda for a higher standard of cultivation was continued with some success and included organised coffee "weeks" during which activities were concentrated on one or two of the more important points which it is wished that growers should adopt. The establishment of shade trees, particularly at the lower elevations is being stressed and also the planting of wash stops as an anti-erosion measure. The production and distribution of young plants continued to be the responsibility of the Agricultural Department but during the year the Bugishu Coffee Scheme took over all financial responsibility, being recouped for the expenditure involved by the proceeds from the sale of plants. Plants are sold at two cents each and total sales during the year amounted to 1,199,595 plants of a total value of £1,199. In addition 106,017 plants were supplied free to established growers for replacement purposes under the scheme for the replacement of unproductive trees. This scheme which started in 1945 was continued throughout Central and South Bugishu and a start was made in North Bugishu and further extensions are planned for 1949.

The total crop of the 1947-48 season amounted to 2,996 tons of coffee in parchment of which 412 tons, or approximately 14 per cent., were bought as buni instead of the usual 3 per cent. or less. The failure of the 1947 autumn rains was responsible for this high percentage of buni (immature cherry). Another unusual feature of the season was the good quality of the first buyings which was not maintained for the main crop. This tended to mislead the Nairobi market and as the United Kingdom Ministry of Food has first call on the better B.C.S. grades, the paradoxical position arose of Native Prepared grades being sold in Nairobi auctions at a higher price than the better quality coffee sold to the Ministry of Food.

There was a good flowering for the 1948-49 season and the crop set well and with good rains from April onwards the trees had little difficulty in carrying the crop. Picking and marketing proceeded normally and by the end of the year a total of 2,012 tons of parchment had been bought and the total crop was estimated at 2,600 tons. The prices paid to the grower were 12 cents per lb. for Grade 2 cherry, an increase of 3 cents per lb. over the previous season, and 50 cents per lb. for Grade 2 parchment, an increase of 11 cents per lb. The premium system of payment for Grade 1 or Super Grade of cherry and parchment was discontinued and in its place, a fixed price of 13 cents per lb. of cherry and 54 cents per lb. of parchment was paid for this grade when it was offered for sale. An improvement in the quality of cherry as regards ripeness can largely be attributed to the institution of a Super Grade.

The total value of the crop to the grower in 1948 was estimated to be £121,692 as compared with £107,215 in 1947. Comparative figures of production and value for the past eight seasons are as follows:—

BUGISHU ARABICA

QUANTITIES MARKETED AND VALUES TO THE GROWER

Season	Parchment Production	Estimated Value
	Tons	£
1940–41 ...	2,165	37,779
1941–42 ...	3,004	79,256
1942–43 ...	2,264	55,861
1943–44 ...	3,679	105,592
1944–45 ...	2,705	73,740
1945–46 ...	2,817	97,169
1946–47 ...	3,058	107,215
1947–48 ...	2,996	121,692

Prior to the 1947-48 season all purchases of cherry were bought on a volume basis, the unit of measurement being the four-gallon kerosene tin. In that season, however, a change over to buying by weight was made which had the full approval of the growers and has proved to be satisfactory.

EASTERN PROVINCE

Robusta.—Cultivation is confined to Busoga District and in 1948, the total crop amounted to 46 tons which is more than double the crop of the previous year. It is too early to say, however, if this increase indicates a renewed interest in the crop by the Basoga. Buying of the crop

was handed over to a local African company during the year and it is possible that this arrangement may encourage some development in the future.

Coffee—Investigational

During the year investigations relating to such matters as the use of mulch, cover crops, effect of different types of shade and tree treatments in the matter of pruning and handling generally have been continued, while problems concerning pests and diseases have also been investigated by the Botanical and Entomological sections of the Department.

A prevalent condition of *Robusta* coffee in Buganda suggests the presence of a virus disease complex. Routine tests are now being made but until the results of these tests are known all consideration of such generalities as deficiency and die-back have been set aside. Further work on the selection of *Robusta* types has been carried out, but some ten years' records of progeny yields have raised problems of yield inheritance which must be solved before it will be wise to start a new generation of selections.

Until 1948 no programme of selection in regard to *Arabica* coffee had been undertaken in Uganda but work has now been started at the Bugusege coffee station on the assessment of variability of yield preparatory to making selections after two years' recording. Meanwhile self-pollinated seed is being raised in order that seedling progenies will be available when the first batch of selections is made.

Work in connection with coffee pests was directed towards problems associated with *Stephanoderes* and a detailed survey of the Bugishu *Arabica* crop where insect pests such as *Antestia* bug, bean borers and cherry caterpillars all do appreciable damage.

Tobacco

Fire-cured

The production of fire-cured tobacco in Bunyoro District was stimulated by an increase in price of eight cents per pound for both grades of leaf. The total acreage was estimated at 6,928 acres as compared with 4,754 acres in 1947 and sales of leaf amounted to 2,470,000 lbs. Growing conditions for the crop were favourable and insect and hail damage was not excessive. Despite wet weather conditions at time of curing causing the growers some difficulty, the grade of leaf produced was excellent. Sales of Grade I leaf represented sixty-one per cent. of the total, which is the highest percentage yet recorded.

The cultivation of fire-cured tobacco was extended to a small portion of Mubende District of Buganda which borders on Bunyoro, with the object of increasing supplies of this type of leaf. Growers showed considerable interest in the crop and although only 668 acres were grown, 404,716 lbs. of cured leaf were marketed, equivalent to an average yield per acre of 606 lbs. This yield compares favourably with yields normally obtained in Bunyoro District where average yields for the crop have not exceeded 562 lbs. per acre. Quality of the leaf produced was satisfactory and sales of Grade I leaf amounted to sixty-two per cent. of the total. A further extension of production in Mubende District is planned for 1949

with the object of ultimately attaining an over-all annual production of fire-cured leaf sufficient to meet the needs of local manufacturers.

FLUE-CURED

On account of the congestion experienced during the previous season at the Terego factory it was considered desirable to restrict planting in the West Nile District to about fifty acres in 1948. Growing conditions were generally favourable and yields were good and this limitation of acreage was fully justified as in the end the production of cured leaf amounting to 26,424 lbs. was little short of last year's total obtained from 87 acres and had this acreage been repeated, the factory would have had serious difficulty in curing the crop. The quality of leaf produced was excellent, largely on account of the favourable growing conditions and the average yield of cured leaf was 499 lbs. per acre. The curing factory at Terego previously operated by the Department, was disposed of during the year and leased to the British American Tobacco Company, which in addition to curing the crop is also responsible for its purchase from the growers at prices fixed by Government. Prices paid in 1948 were 6 cents and 5 cents per lb. for light and medium grade leaf respectively, representing an increase of 1 cent per lb. over the prices paid in 1947. The price for third grade leaf was unchanged at 3 cents per lb.

The flue-cured tobacco industry in Acholi District made substantial progress. Two crops were grown, the first of 93 acres and the second of 118 acres as compared with last year's total of 34 acres for three trial crops. The first crop was planted in April, and dry weather in May which retarded growth, followed by heavy rains in June and July often accompanied by hail, had an adverse effect on leaf quality although yields on the whole were satisfactory and averaged 450 lbs. of cured leaf per acre. Total purchases were 375,544 lbs. of green leaf which produced 41,860 lbs. of cured leaf.

The second crop was planted under good conditions in July but subsequent rainfall was excessive and both yield and quality suffered in consequence and the yield of cured leaf was reduced to 371 lbs. per acre giving a total output of 43,860 lbs. of cured leaf. The combined production from the two crops was 85,720 lbs. of cured leaf.

AIR-CURED

Production of this type of tobacco is confined to the West Nile District and one crop per year is grown. Despite difficulties from dry weather in the nursery stages and later when planting out, a good crop was harvested totalling 109,290 lbs. of cured leaf which is approximately double the figure for the previous year. Curing took place under fairly good conditions and quality was satisfactory, approximately 75 per cent. of the purchases passing as first grade.

NICOTINE TOBACCO

This crop is grown in the Kigezi District and to a less extent in Ankole District of the Western Province. There was again a considerable increase in acreage which reached a total of 2,765 acres for two crops as against

2,022 acres in 1947. Production totalled 1,660,000 pounds, an increase of 703,000 pounds over the figure for the previous year, and yields were generally good and were of the order of 600 lbs. of dry leaf per acre. Although further extension of this crop is possible and a target of two million pounds of leaf per year is aimed at, it is not unlikely that the production peak has been reached as it will be necessary to restrict acreages in densely populated areas to ensure that land is adequately rested.

Oilseeds

Policy was again directed towards encouraging maximum production of oilseeds and with that in view, prices for groundnuts and simsim were raised by approximately five cents per pound in all producing areas. Owing to the prolonged drought in the early part of the year, however, planting was delayed in many areas and there was little increase in acreage and in the case of simsim there was an actual decrease. The increased prices therefore did not have the full effect hoped for but at least production of groundnuts, which are mainly grown as a food crop, was maintained at the previous year's level of some 100,000 tons, with total sales amounting to 9,824 tons.

Groundnuts

In the Eastern Province, Busoga and Teso Districts are the principal producing areas. Dry season conditions were less severe in Busoga than in Teso and in that district it was possible to achieve an increase in acreage amounting to some 24,000 acres. In Teso, however, the acreage decreased by a similar figure and the total acreage for the Province of 216,019 acres was little greater than the figure for the previous year. The crop was variable and Rosette disease tended to be severe, particularly in Teso District where growers failed to achieve good stands through using too low a seed rate. In that district, the doubtful food position necessitated the restriction of sales in the interests of internal food supplies with the result that sales were considerably less than in the previous year. In Busoga, however, sales amounted to 5,906 tons of shelled nuts which was a record for the district. Total sales in the Province were 8,484 tons, which is the highest figure yet achieved.

Ankole District of the Western Province again made a useful contribution with sales totalling 902 tons, which is approximately double the 1946 production. The crop is undoubtedly increasing in popularity in that district and a marked increase in acreage and production in 1949 is anticipated. There was a small production for sale in Toro District of approximately 50 tons but elsewhere in the Western Province, the crop is grown primarily as a food crop. In Kigezi District, however, growers in the re-settlement areas in the north of the district are taking considerable interest in the crop and a small production for export may be obtained in future years.

In Buganda Province, sales were 352 tons, representing an increase over the previous year's figure of 54 tons. Sales in Mubende District, where groundnuts are a long-established cash crop, contributed 223 tons towards the total.

Northern Province production for sale was negligible apart from internal trading in the crop at native markets. Acreages were considerably lower than in the previous year as seed supplies were inadequate on account of growers having failed to reserve sufficient seed for planting from the previous crops. In addition, yields were poor and production generally was sufficient only for internal requirements.

Simsim

There was a decrease in acreage and production in all areas growing this crop, for which weather conditions and the competing claims of the cotton crop were largely responsible. Sales amounted to 226 tons only, of which Teso and Busoga Districts contributed 102 tons. As in the case of groundnuts, marketing was restricted in Teso District in the interests of internal food supplies.

Shea Butter Nuts

Sales of this crop were approximately half those of the previous years. In the Northern Province, the late burning of the grass prevented the trees bearing a crop and only 33 tons were sold as compared with 371 tons in 1947. The crop in Teso District of the Eastern Province was good but a larger proportion of the nuts was used for food than is normally the case and sales amounted to 500 tons only. Last year's total was 870 tons.

Castor Seed

Production of this crop for sale is confined largely to Buganda Province, sales in other areas being negligible. Total sales amounted to 225 tons of which Buganda produced 214 tons. On account of the risk of contamination of other produce, particularly coffee and oil seeds destined for crushing, consideration is being given to suspending sales or introducing rigid marketing precautions to ensure that castor seed cannot find its way into other exported produce as even a small degree of adulteration is liable to have a serious effect on the good name of Uganda produce on the export market.

Cotton Seed

Production of cotton seed from the 1947-48 cotton crop amounted to 64,774 tons, which was utilised as follows:—

	Tons
Local crushing	41,661
Reserved for planting	19,672
Fuel supplies	2,465
Exports to United Kingdom ...	700
Uganda cattle feed sales	189
Kenya cattle feed sales	70
Manuring	17
Total ...	64,774

Seed allocated for crushing was equivalent approximately to 833,000 gallons of crude cotton seed oil and 14,000 tons of cotton seed cake, of which 8,000 tons was exported to Kenya and the balance to the United Kingdom

as cattle feed. Taken in conjunction with the smaller production of groundnut and simsim oil, it will be seen therefore that Uganda has continued to meet to a large extent the increasing demands for vegetable oils, both locally and in Kenya and, in addition, provided a useful contribution to the United Kingdom's requirements of cattle cakes.

Miscellaneous Oil Seeds

Sunflower and linseed trials continued in selected areas of the Western Province and results have been sufficiently promising in the case of the former crop to justify its encouragement as a minor cash crop in the non-cotton-growing areas of Toro District. Linseed trials were not so satisfactory as the crop was attacked by *Pasmo* disease and it is not at present considered desirable to recommend its cultivation on an economic scale. Surplus flax seed derived from the Kigezi flax industry totalled 172 tons, all of which was exported to the United Kingdom.

Grain Crops

Maize

Production was again undertaken primarily in the interests of the East African Cereals Pool. The total acreage planted in the main producing areas, 141,000 acres in Buganda and 74,000 acres in the Eastern Province, was little greater than last year's figure but it was a good year for maize and exports to the Pool totalled 29,336 tons as compared with 16,648 tons in the previous year. Total sales were 48,976 tons, of which Buganda produced 41,975 tons. The Western Province sold a small crop of 517 tons and the Eastern Province crop of 6,484 tons exceeded expectations and after internal requirements had been met the surplus was disposed of as cattle feed to Kenya. There was a marked increase in the quantities required for internal consumption largely on account of the enhanced demands from employers of labour and approximately 19,000 tons were sold for this purpose as compared with 12,000 tons during the previous year. The crop would appear, therefore, to be entrenching itself more strongly than ever as one of the principle ration food crops and much as this tendency is to be regretted it would appear to be inevitable in view of the growth of industry and the lack of a suitable alternative ration crop. It is all the more essential, therefore, that methods of cultivation should be controlled in the interests of maintaining fertility and with this in view, extensive trials of inter-cropping maize at wide spacings with beans and groundnuts are being made. Control of soil erosion is the primary aim of these trials, but in addition and if successful, the methods contemplated will encourage, not only an increased production of beans and groundnuts which are in considerable demand, but also permit of the following cotton crop being planted earlier with a corresponding advantage for cotton production.

Rice

Production was on a similar scale to that of the previous year but in the Mbale District of the Eastern Province, which is the principal rice growing area, an unusually large proportion of the crop was brought to

the official markets on account of heavy importations of rice being made shortly prior to the commencement of marketing. This resulted in the unofficial channels of sale being closed to growers to a large extent and total sales made in that district amounted to 1,348 tons as against 281 tons in the previous year. These unexpectedly large sales necessitated immediate hulling and disposal as storage space at the hulleries, which are also ginneries, was inadequate. Sales of rice in the Bwamba area of Toro District also showed a marked increase and probably for a similar reason, as plantings were considerably lower than in the previous year. Irrigation is now being practised on a small scale in that rice growing area but the work involved in constructing water channels does not yet appeal to the growers despite the heavier yields obtained from rice grown under irrigation.

Millets

Although the greatest production of both finger millet and sorghum millet is in the Eastern and Northern Provinces, sales were negligible on account of the necessity of conserving internal food supplies. In Buganda Province, where sorghum millet is not used as a food but is produced primarily for use in beer brewing, a surplus amounting to 290 tons was sold.

Pulses

Mixed Beans

Although it was a favourable year for beans and yields were good, particularly from the spring crop, recorded sales in Buganda, which is the main producing area, amounted to 1,214 tons only. This figure compares with 9,986 tons sold in 1946 and 2,547 tons in 1947. High cotton and coffee prices are probably partly responsible for this decline but it appears also that the internal consumption of this crop as food is increasing. There was a similar trend in Ankole District of the Western Province but in this case, marketing difficulties experienced in the previous year were partly responsible. Small sales were also made in Toro and Kigezi Districts which sufficed for the needs of employers of labour and institutions.

Soya Beans

In Buganda Province, an increase in price in all producing areas was reflected in increased production and 1,836 tons were sold as compared with 870 tons in the previous year. Increased prices in Ankole District, however, did not have the same effect as interest in the crop has declined in favour of groundnuts, which in addition to being higher priced, have the advantage of being a relished food which soya beans are not. Sales totalled some 457 tons, comparative figures in previous years being 934 tons in 1946 and 530 tons in 1947. This crop is not grown in other parts of the Protectorate.

Field Peas

Peas are of economic importance only in Ankole and Kigezi Districts of the Western Province where they are also an important article of diet. Considerable sales were made during the year but the demand was such

that prices rose far above the fair market price and all surplus stocks for sale were disposed of through uncontrolled markets and figures of sales are not available.

Grams

Despite the fixing of a maximum f.o.r. price of Shs. 530 in an effort to control excessive production of grams, the high prices paid throughout the greater part of 1947 were reflected in still greater production in 1948. A total of 6,046 tons were sold in Buganda and 1,121 tons in the Eastern Province. Towards the end of the marketing season, the fixed maximum price was reduced to Shs. 200 per ton and as, in addition, the export market for this crop had collapsed, it is probable that production within the limits of internal requirements only will be resumed, thus effecting the desired reduction in competition between this crop and other crops which are more urgently required and which are of greater permanent economic value.

Miscellaneous Crops

Flax

The flax industry of Kigezi and Ankole Districts suffered from many difficulties. The spring rains were inadequate for good growth and in consequence straw tended to be short. *Pasmo* disease invaded the crop in several areas and the quality of the fibre was affected in consequence. Finally, the processing side of the industry was hampered by the loss of the Buyanzha factory which was gutted by fire, and for that reason it was necessary to decrease the autumn planted acreage substantially. All these factors combined to reduce production and the total factory output amounted to 25·5 tons of fibre and 29 tons of tow which was one-third, approximately, of the 1947 output. There was some increase in seed production, however, sales of which totalled 172 tons.

Chillies

There was a marked drop in sales on account of low prices being offered and only 673 tons were sold as compared with 1,623 tons in the previous year. Quality was poor and arrangements are being made in consultation with the Kenya Department of Agriculture for the crop to be graded at Mombasa prior to export and it is hoped this will result in some improvement in quality.

Fruit

Hard fruits, citrus and pineapples were decontrolled during the year and production records are not therefore available. Exports of the large seasonal surplus produced in the Eastern Province were continued to Kenya.

English Potatoes

There was a considerable increase in sales made from Kigezi District which totalled 470 tons. Blight disease which destroyed much of the crop in 1942 and succeeding years did much less damage than hitherto. Seed of blight resistant varieties has been distributed and in time it is hoped that losses from the disease will be reduced to small proportions. Recorded

sales in Buganda amounted to 152 tons, and in the Eastern Province a company of African growers in the Sebei area of Bugishu sold 33 tons to the Koja Polish Refugees Camp.

HONEY AND BEES-WAX

It was a poor season for honey and only 93 tons were sold. Wax production also decreased and sales amounted to 2,430 lbs. only.

Staff

There was some strengthening of the staff position during the year: three agricultural officers joined the department on first appointment and two European agricultural assistants were added to the staff. There are still, however, a number of vacancies and it was not possible during the year to post an agricultural officer to such important districts as Toro and Ankole.

The secondment of Mr. H. L. Manning by the Empire Cotton Growing Corporation for work on cotton breeding problems is recorded with appreciation.

Once again the thanks of the Department are due to the Director of Supplies, to the Deputy Controllers of Agricultural Produce and to the many unofficial members of the community who have been friendly, helpful and co-operative. My thanks are due also to all members of the Department who have worked loyally and well throughout the year.

A. B. KILLICK,
Director of Agriculture.

Cotton Production 1947–48 Season

Province and Zone	Acreages		Sales in Tons		Yields per acre in lbs	
	Totals 1947–48	Means 1943–48	Totals 1947–48	Means 1943–48	1947–48	Means 1943–48
BUGANDA—						
Mengo-Entebbe	226,812	280,588	33,579	45,939	331	374
Masaka	25,819	29,658	4,528	4,063	392	309
Mubende-Toro	53,032	67,189	8,010	9,599	338	320
TOTALS ...	305,663	377,435	46,117	59,601	*337	353
EASTERN—						
Busoga	184,459	234,137	17,828	24,073	216	245
North Central	123,878	113,871	8,421	9,634	152	195
South Central	98,124	100,167	7,025	6,576	160	155
Usuku	11,044	16,321	1,256	866	255	132
North Teso	30,499	37,590	1,453	1,289	107	85
South Teso...	48,599	47,409	3,715	3,216	171	161
Segregated Areas	27,834	28,201	2,027	1,854	163	151
TOTALS ...	524,437	577,696	41,725	47,508	*178	184
WESTERN—						
Bunyoro	19,950	16,554	1,883	1,749	*211	240
NORTHERN—						
North Lango	75,603	59,524	4,944	5,603	147	213
South Lango	31,283	33,749	1,356	1,938	97	129
West Acholi	24,292	20,118	1,406	1,810	128	203
East Acholi Lower	8,883	6,736	536	517	136	178
East Acholi Upper	21,681	11,736	1,192	868	123	162
West Nile-Madi	25,037	19,213	1,954	1,737	174	204
TOTALS ...	186,779	151,076	11,388	12,473	*136	185
PROTECTORATE TOTALS ...	1,036,829	1,122,761	101,113	121,331	*218	242

*Means.

Cotton Production 1948–49 Season

Monthly Plantings—Acres

Province and Zone	April	May	June	July	August	September	Totals
BUGANDA—							
Mengo-Entebbe	...	8,158	105,834	140,845	106,529	2,542	363,908
Masaka	...	1,641	15,258	9,742	9,772	6,446	42,859
Mubende-Toro	...	2,906	14,549	35,738	32,238	1,009	86,440
TOTALS ...	...	12,705	135,641	186,325	148,539	9,997	493,207
EASTERN—							
Busoga	...	36,989	87,341	81,360	35,371	1,187	242,248
South Central	12	14,255	63,411	71,879	18,773	...	168,330
North Central	374	15,832	57,409	73,624	24,840	...	172,079
North Teso	144	8,142	23,832	19,159	7,337	...	58,614
Usuku	1,514	7,968	7,710	1,247	...	...	18,439
South Teso...	1,026	12,849	27,297	19,617	9,501	...	70,290
Segregated Areas	976	9,691	12,098	10,300	4,761	...	37,826
TOTALS ...	4,046	105,726	279,098	277,186	100,583	1,187	767,826
WESTERN—							
Bunyoro	...	309	7,706	15,363	3,976	22	27,376
NORTHERN—							
North Lango	...	7,540	45,110	57,727	7,400	...	117,777
South Lango	624	4,622	14,777	21,859	6,131	...	48,013
West Acholi	...	65	7,975	24,213	5,605	...	37,858
Acholi East: Upper ...	...	1,786	8,496	8,961	2,473	...	21,716
Acholi East: Lower ...	...	635	3,651	3,184	310	...	7,780
West Nile-Madi	...	...	7,828	21,012	4,978	...	33,818
TOTALS ...	624	14,648	87,837	136,956	26,897	...	266,962
PROTECTORATE TOTALS ...	4,670	133,388	510,282	615,830	279,995	11,206	1,555,371

Estimated Acreages under Crops—1947 and 1948

Native Cultivation

Crops	Buganda Province		Eastern Province		Northern Province		Western Province		Totals	
	1947	1948	1947	1948	1947	1948	1947	1948	1947	1948
Beans, Mixed	71,424	87,173	135,527	142,872	42,520	67,115	94,458	117,874	343,929	415,034
Beans, Soya	8,617	10,684	...	...	7	...	7,706	5,306	16,330	15,990
Cassava	101,600	90,364	128,197	184,837	116,314	138,847	88,273	84,261	434,384	498,309
Chillies	8,656	494	...	...	...	...	122	63	8,778	557
Coffee, *Arabica*	2,850	2,260	9,210	9,600	...	...	3,442	3,315	15,502	15,175
Coffee, *Robusta*	142,271	146,037	699	600	...	...	4,023	3,845	146,993	150,482
Cotton	305,663	476,710	524,437	792,524	186,779	246,787	19,615	43,874	1,036,494	1,559,895
Flax	...	...	...	...	...	...	2,912	3,335	2,912	3,335
Grams	23,203	44,043	...	15,500	...	...	60	...	23,263	59,543
Groundnuts	45,755	57,883	212,333	216,019	56,243	48,734	16,862	23,978	331,193	346,614
Maize	116,903	141,366	77,730	74,067	20,466	36,855	43,124	43,497	258,223	295,785
Millet, Sorghum	15,844	25,458	145,321	124,116	112,681	143,477	137,205	112,810	411,051	405,861
Millet, Finger	15,972	15,182	600,894	612,557	265,950	280,521	124,688	121,200	1,007,504	1,029,460
Millet, Bulrush	...	...	10,844	3,045	740	365	...	...	11,584	3,410
Onions	...	...	...	...	...	...	1,461	2,044	1,461	2,044
Peas, Pigeon	...	...	...	...	129,095	157,634	630	789	129,725	158,423
Peas, Field	...	...	...	...	...	...	30,032	34,728	30,032	34,728
Plantains	462,535	281,583	254,000	254,900	397	1,282	72,076	76,755	789,008	614,520
Potatoes, Sweet	94,672	116,948	144,555	179,163	73,400	86,537	139,944	145,192	452,571	527,840
Potatoes, English	1,104	2,365	...	395	...	...	2,109	4,302	3,213	7,062
Rice	...	...	22,184	23,624	3,502	3,733	2,084	1,672	27,770	29,029
Simsim	4,586	5,023	39,476	29,819	213,886	189,431	9,892	7,891	267,840	232,164
Tobacco, Fire-cured	...	668	...	...	...	...	4,754	6,928	4,754	7,596
Tobacco, Flue-cured	...	...	...	...	141	264	...	...	141	264
Tobacco, Air-cured	...	...	...	...	249	431	...	...	249	431
Tobacco, Nicotine	...	...	...	...	...	...	2,022	2,765	2,022	2,765
Wheat	...	...	...	1,383	...	...	360	1,004	360	2,387
TOTALS ...	1,421,655	1,504,241	2,305,407	2,665,021	1,222,370	1,402,013	807,854	847,428	5,757,286	6,418,703

Crop Production 1948

Quantities Marketed and Estimated Values—Native Production

Crop	Buganda Province		Eastern Province		Northern Province		Western Province		Protectorate Totals	
	Quantity	Value	Quantity	Value	Quantity	Value	Quantity	Value	Quantity	Value
	Tons	£	*Tons*	£	*Tons*	£	*Tons*	£	*Tons*	£
Beans, Mixed	1,214	7,795	...	...	...	...	143	971	1,357	8,766
Beans, Soya	1,835	22,609	...	...	...	...	457	4,781	2,292	27,390
Castor, Seed	214	3,912	2	33	...	...	9	96	225	4,041
Chillies	673	7,557	...	...	...	...	...	...	673	7,557
Coffee, *Arabica*	604	14,772	2,996	121,692	...	...	183	8,727	3,783	145,191
Coffee, *Robusta*	*68,307	1,424,782	46	951	...	...	413	17,297	68,766	1,443,030
Cotton	45,082	1,099,601	43,081	1,012,515	†10,032	220,710	2,918	65,990	101,113	2,398,816
Flax, Straw	...	...	...	...	...	...	1,259	4,407	1,259	4,407
Flax, Seed	...	...	...	...	...	...	172	1,567	172	1,567
Grams	6,046	117,333	1,121	24,662	...	...	...	...	7,167	141,995
Groundnuts	352	6,628	8,484	187,353	5	121	983	14,518	9,824	208,620
Maize	41,975	235,069	6,484	28,998	...	...	517	2,736	48,976	266,803
Millet, Sorghum	290	1,719	...	...	...	...	...	...	290	1,719
Millet, Finger	15	107	...	...	...	...	...	...	15	107
Millet, Bulrush	...	...	...	...	...	...	...	...	...	...
Onions	42	1,090	...	...	...	...	27	302	69	1,392
Peas, Pigeon	...	...	...	...	...	...	...	...	...	...
Peas, Field	...	...	...	...	...	...	8	134	8	134
Potatoes, English	152	1,291	...	...	...	...	470	2,632	622	3,923
Rice	...	...	1,349	17,551	...	...	251	2,249	1,600	19,800
Simsim	72	1,613	102	2,284	13	291	38	865	225	5,053
Shea Butter Nut	...	...	500	10,086	33	369	...	...	533	10,455
Tobacco, Fire-cured	181	8,764	...	...	...	...	1,103	53,554	1,284	62,318
Tobacco, Flue-cured	...	...	...	...	400	2,522	...	...	400	2,522
Tobacco, Air-cured	...	...	...	...	76	3,602	...	...	76	3,602
Tobacco, Nicotine	...	...	...	...	...	...	741	9,963	741	9,963
Wheat	...	...	...	...	...	...	64	701	64	701
TOTALS	167,054	2,954,642	64,138	1,406,125	10,559	227,615	9,756	191,490	251,534	4,779,872

*Dried cherry (Kiboko)

†Excluding South Lango

Exports of Domestic Produce, 1948

Article	Unit.	Quantity	Value
			£
OILSEEDS AND PRODUCTS—			
Cotton seed	Ton	619	8,930
Castor seed	,,	176	5,510
Groundnuts	,,	3,209	120,149
Linseed	,,	65	3,370
Cottonseed cake	,,	6,802	123,124
Groundnut cake	,,	129	2,065
Sesame cake	,,	170	3,128
Castor seed oil	,,	13	1,546
Edible fats	,,	493	46,961
FIBRES—			
Cotton	*bales*	174,257	7,457,617
Sisal	*Ton*	1,183	91,217
Flax	,,	67	10,405
BEVERAGE CROPS AND TOBACCO—			
Coffee	,,	37,804	3,246,664
Tea	,,	1,036	229,308
Tobacco and cigars	*lbs.*	315,845	19,548
Cigarettes	,,	1,752,870	842,771
SPICES AND DRUGS—			
Chillies	*Ton*	1,561	75,282
Cinchona bark	,,	44	9,159
Papain	,,	33	54,921
SUGAR AND PRODUCTS—			
Sugar	,,	31,104	757,989
Jaggery	,,	139	5,650
Ethyl alchohol	*proof gals.*	13,606	3,229
BEANS AND PULSES—			
Beans and peas	*Ton*	653	16,734
Pulses	,,	6,622	228,967
Dhall	,,	44	2,741
Soya beans	,,	2,223	65,907
MISCELLANEOUS—			
Fish, dried and smoked	,,	1,859	109,059
Insecticides	,,	23	16,679
Millet	,,	462	7,455
Rubber	,,	18	18,356
Timber	,,	2,187	36,723
Hides and skins	,,	2,119	530,693
Salt	,,	1,309	5,603
Metal ore	,,	104	43,393
Tin	,,	283	103,231
Aluminium ware	,,	196	70,631
Ivory	,,	26	37,128
Gold	*oz. Troy*	369	2,907
All other items	...	...	46,738
TOTAL	...		£14,461,488

Comparative Statement of Exports of Domestic Produce from the Uganda Protectorate

A. Quantities

	Unit.	1944	1945	1946	1947	1948
Grain and Flour	*Cwt.*	62,393	119,420	181,718	144,801	9,240
Feeding Stuffs for Animals	*Ton*	50	721	1,266	1,344	7,101
Chillies	*Cwt.*	13,405	9,406	23,214	39,451	31,220
Coffee, Raw Hulled	,,	364,506	393,493	610,403	413,660	756,080
Salt	,,	29,891	29,078	36,374	30,936	26,180
Sugar, Refined	,,	209,834	221,343	191,239	384,604	622,080
Tea	,,	12,746	18,150	11,983	21,581	20,720
Other Articles of Food and Drink	*Value*	...	...	...	...	...
Cigarettes	*Lbs.*	1,891,023	2,001,107	2,053,881	1,743,146	1,752,870
Tobacco, Manufactured	,,	41,972	24,707	36,796	17,505	315,845
Tobacco, Unmanufactured	,,	923,246	263,450	403,948	227,411	
Timber	*Cu.ft.*	9,597	37,090	317,007	123,938	131,220
Tin Ore	*Ton*	385	287	296	189	283
Cotton, Raw	*Cental*	758,079	1,057,818	876,779	1,012,323	697,028
Sisal, Fibre and Tow	*Ton*	958	998	1,055	677	1,183
Seeds, Cotton	,,	13,829	34,094	22,872	10,153	619
Seeds, Sesame	,,	...	...	...	...	...
Groundnuts	,,	2	...	3	2,106	3,209
Hides	*Cwt.*	22,060	21,043	16,280	30,632	42,380
Skins	*No.*	184,610	475,068	720,905	893,058	
Rubber	*Cental*	15,188	12,945	13,839	4,226	403
Ivory	*Cwt.*	386	570	696	433	520
Other Unmanufactured Articles	*Value*	...	...	...	...	...
Methylated Spirits	*Gals.*	1,238	1,352	1,244	738	13,606
Other Articles	*Value*	...	...	...	...	...
Gold Bullion	*Oz.*	3,228	2,751	2,490	1,432	369

NOTE.—Exports to Kenya are not included.

B. Value—£

	1944	1945	1946	1947	1948
	£	£	£	£	£
Grain and Flour	40,826	85,992	191,955	228,887	7,455
Feeding Stuffs for Animals	140	4,771	12,982	18,662	128,317
Chillies	41,581	40,742	103,735	149,046	75,282
Coffee, Raw Hulled	1,012,618	1,143,211	1,767,448	1,535,707	3,246,664
Salt	5,734	4,966	6,477	7,880	5,603
Sugar, Refined	173,397	197,998	201,490	407,126	757,989
Tea	88,286	120,531	86,061	240,471	229,308
Other Articles of Food and Drink	88,588	67,133	...	90,445	486,445
Cigarettes	563,983	673,618	769,635	726,283	842,771
Tobacco, Manufactured	7,323	4,623	5,064	4,605	19,548
Tobacco, Unmanufactured	43,146	7,476	12,153	7,232	
Timber	2,373	12,502	103,690	41,368	36,723
Tin Ore	68,247	50,894	53,255	40,151	103,231
Cotton Raw	5,043,413	7,025,774	5,620,079	7,118,962	7,457,617
Sisal	22,991	27,098	39,436	34,491	91,217
Seeds, Cotton	57,467	142,240	105,374	65,101	8,930
Seeds, Sesame	...	...	...	1	...
Groundnuts	42	...	52	65,198	120,149
Hides	84,261	80,742	94,273	266,026	530,693
Skins	26,185	60,042	184,395	207,831	
Rubber	57,073	48,629	53,988	21,177	18,356
Ivory	23,687	37,711	50,974	32,459	37,128
Other Unmanufactured Articles	51,489	73,170	...	103,156	117,878
Methylated Spirits	258	258	286	171	3,229
Other Articles	7,917	11,161	...	24,769	134,048
Gold Bullion	20,837	17,920	16,642	10,475	2,907
TOTAL £	7,531,862	9,939,202	9,479,444	11,447,680	14,461,488

APPENDIX V

Crop Production—Uganda

Non-Native Production 1948

Crop	Estimated Acreage		Estimated Production			
			Amount		Value	
	1947	1948	1947	1948	1947	1948
	Acres	Acres	Tons	Tons	£	£
Coffee	17,591	*15,763	4,897	†3,592	342,790	281,928
Rubber ...	7,000	7,000	189	...	21,177	...
Sugar	28,000	25,790	56,916	64,708	1,206,619	1,358,868
Sisal	8,600	9,920	850	1,501	42,500	120,080
Tea	5,121	5,656	1,725	1,606	386,534	359,744
TOTALS ...	66,312	64,129	64,577	71,407	1,999,620	2,120,620

*Revised figures †1947-48 season

UGANDA PROTECTORATE

Principal Agricultural Legislation—1948

Legal Notice No	Ordinance or Regulations and Short Title	Reasons
31	The Tea (Control) Ordinance, 1940: (No. 19 of 1940): Proclamation.	To provide for the continuation in force of the Ordinance for a period of three years from the date of declaration of the end of the war.
34	The Supplies and Services Act, 1945: The Defence Amendment of Laws Regulations Order, 1948.	This order establishes numerous centres as cotton markets which had previously been established under certain of the Defence Regulations 1939, now repealed.
65	Native Authority (Amendment) Rules, 1948.	To make provision for the application of the Native Authority Ordinance to cover all aspects of cultivation of the cotton crop in the interests of higher yields.
81	The Native Produce Marketing Ordinance. The Native Produce Marketing (Coffee) Rules, 1948.	Revision of the coffee marketing rules to provide for better control of coffee marketing.
84	The Plant Protection Ordinance, 1937: Order: Prohibition of Importation of Herbaceous ornamental Plants.	To prohibit importation of herbaceous ornamental plants in a vegetative condition except plants which have been grown in the colony of Kenya.
85	The Plant Protection Ordinance, 1937: Prohibition of Importation of Tea Seed.	To prohibit the importation of all tea seed into the Protectorate unless prior permission has been obtained from the Director of Agriculture, in the interests of control of disease.
93	Defence (Cotton Control) Regulations, 1943: Defence (Sale of Cotton to India) Regulations (Variations) Order 1948.	Fixing the f.o.b. prices for cotton lint from the 1947 crop exported to India and the commission payable to the Cotton Exporters' Group on sales.
105	Defence (Controlled Produce) Regulations, 1943: Regulation 7 (*a*): Prices of Primary Produce.	Revision of prices to growers for Soya Beans.
109	The Native Produce Marketing Ordinance. The Native Produce Marketing (Coffee) Rules, 1948: Limitation of Number of Licences.	To limit the number of licences which may be issued for the purchase of the specified native produce of coffee, in respect of certain buying centres as stated in previous legislation.
116	Defence (Controlled Produce) Regulations, 1943: Marketing of Maize Order, 1948.	Amendment of the definition of Uganda F.A.Q. Maize.
168	The Defence Regulations, 1939: Regulation 38: The Prices of Produce Order, 1948.	To fix maximum f.o.r. prices for grams, grains, pigeon peas and field peas, with the object of controlling excessive production.
173	The Native Produce Marketing Ordinance: The Native Produce (Cess) (Amendment) Rules, 1948.	To widen the membership of the Tobacco Cess Control Board in consequence of the extension of tobacco production to the Buganda and Northern Provinces.

175	The Native Produce Marketing Ordinance: Order: Cess on leaf tobacco in Mubende District.	To fix a cess of 3 cents per lb. to be paid by all licence holders purchasing native produced leaf tobacco in Mubende District.
182 203	The Supplies and Services Act, 1945: The Defence Regulation Order, 1948: Regulation (No. 2).	To provide for the control of production of certain scheduled processed produce and the erection of processing machinery.
238	Defence (Controlled Produce) Regulations, 1943: Regulations 7 (*a*) (*c*) (*f*) and (*h*): Fixation of Prices for cotton seed and transport charges to stations and mills; bagging and disposal of cotton seed.	To provide for the disposal of cotton seed at fixed prices, and to ensure the maximum utilisation of supplies for use as seed and for milling and export.

Ordinance No.	Title	Reasons
12	Non-Native Coffee (Marketing) (Amendment) Ordinance, 1948 ...	To make provision for:— (*a*) the improved constitution of the non-native Coffee Marketing Board; (*b*) an extension of the Board's marketing powers with particular reference to undergrade coffee; (*c*) the recording of acreages and ownership of the estates of all registered non-native coffee growers.

Buganda Government Legislation—1948

General Notice No.	Title	Reasons
295	Agricultural Law, 1946: Rules	To make provision for the application of the Agricultural Law, 1946, to the cultivation of cotton with the object of attaining a higher standard of cultivation of the crop.

Staff Postings—1948

A. ADMINISTRATIVE

Title	Name	Station	Period	Remarks
Director of Agriculture	A. B. KILLICK ...	Entebbe ...	1- 1-48—23-11-48	Proceeded on vacation leave.
Deputy Director of Agriculture... ...	T. Y. WATSON ...	Entebbe ...	1- 5-48—31-12-48	Transferred from Kenya. Acting Director of Agriculture 20-11-48—31-12-48.
Assistant Director of Agriculture ...	T. R. HAYES ...	Entebbe ...	1- 1-48—31-12-48	Acting Deputy Director of Agriculture 1-1-48—4-5-48, 20-11-48—31-12-48.
Senior Agricultural Officer	W. J. M. IRVING ...	Entebbe ...	1- 1-48—31-12-48	Acting Assistant Director of Agriculture 1-1-48—4-5-48, 20-11-48—31-12-48.

B. GENERAL DIVISION

Principal Agricultural Officer	W. T. O. MAIDMENT ...	Jinja ...	1- 1-48—31-12-48	
Senior Agricultural Officers	R. P. DAVIDSON ...	Masindi ...	1- 1-48—31- 3-48	Lira 1-4-48—31-12-48.
	M. G. DE COURCY-IRELAND	Masindi ...	19- 2-48—31-12-48	On leave till 18-2-49.
	R. K. KERKHAM ...	Kawanda ...	1- 1-48—24-10-48	Proceeded on vacation leave.
	R. W. STUCKEY ...	Makerere ...	1- 1-48—31-12-48	On leave 23-2-48—16-9-48.
	T. MCEWEN ...	Mubende ...	2- 3-48—24- 8-48	On leave till 1-3-48. Masaka 25-8-48—31-12-48.
	H. L. G. MILNE ...	Lira ...	1- 1-48—31- 3-48	Arua 1-4-48—31-12-48.
	D. F. STEWART ...	Kampala ...	1- 1-48—31-12-48	
Agricultural Officers	E. WILLIAMS ...	Serere ...	1- 1-48—31-12-48	On leave 27-2-48—1-10-48.
	D. R. N. BROWN ...	Kabale ...	31- 5-48—31-12-48	On leave till 30-5-48.
	J. W. PURSEGLOVE ...	Kabale ...	1- 1-48—31-12-48	On leave 23-6-48—26-12-48.
	J. M. WATSON ...	Moroto ...	1- 1-48—31-12-48	
	G. D. BADGER ...	Mbale ...	1- 1-48—31-12-48	On leave 24-5-48—18-12-48.
	S. MCCOMBE ...	Masaka ...	1- 1-48— 4- 9-48	Proceeded on vacation leave.
	R. K. TREMLETT ...	Mbale ...	31- 5-48—31-12-48	On leave till 30-5-48.
	A. E. B. WILLIAMS ...	Bukalasa ...	1- 1-48— 9- 1-48	Serere 10-1-48—1-10-48. Kawanda 2-10-48—31-12-48.
	D. D. CAMPBELL ...	Jinja ...	7- 3-48— 7- 9-48	New appointment. Soroti 8-9-48—31-12-48.
	D. J. PARSONS ...	Serere ...	10-10-48 30-11-48	New appointment. Kawanda 1-11-48—31-12-48.

	E. S. T. Marshall ...	Soroti ...	1- 1-48— 6- 9-48	Jinja 7-9-48—31-12-48.
	G. Wrigley ...	Kampala ...	1- 1-48—31-12-48	
	P. S. Cooper ...	Hoima ...	1- 1-48—31-12-48	On leave 3-4-48—10-10-48.
	D. C. Todd ...	Hoima ...	20- 2-48—31-12-48	New appointment.
	W. Galley ...	Lira ...	16-10-48—31-12-48	New appointment.
	J. W. Hext ...	Jinja ...	1- 1-48—23-10-48	Proceeded on vacation leave.
Senior European Agricultural Assistants	J. F. Low ...	Serere ...	1- 1-48—31-12-48	
	R. W. Maling ...	Kampala ...	1- 1-48—31-12-48	
	E. de C. Chisholm ...	Mbale ...	1- 1-48— 2- 7-48	Proceeded on vacation leave.
	V. A. Bunge ...	Serere ...	20-11-48—31-12-48	New appointment—transferred from Medical Department.
European Agricultural Assistants ...	T. Boothroyd ...	Kampala ...	1- 1-48—19-12-48	Proceeded on vacation leave.
	G. Oliver ...	Kawanda ...	1- 1-48—31-12-48	
	L. B. Ellis ...	Bukalasa ...	1- 1-48—31-12-48	
	Capt. T. G. Duncan ...	Kampala ...	13-10-48—31-12-48	New appointment.
Flax Officer	G. A. Fennell ...	Kisizi ...	1- 1-48—31-12-48	

C. Laboratories Division

Senior Entomologist	W. V. Harris ...	Kawanda ...	5- 1-48—31-12-48	On leave till 4-1-48.
Entomologists	A. P. G. Michelmore ...	Kawanda ...	1- 1-48—31-12-48	
	P. R. Stephenson ...	...	...	Seconded to Kenya.
Senior Chemist	G. Griffith ...	Kawanda ...	1- 1-48—31-12-48	
Senior Botanist	J. D. Jameson ...	Kawanda ...	21- 1-48—31-12-48	On leave until 20-1-48.
Botanist	D. G. Thomas ...	Kawanda ...	1- 1-48—30-11-48	Serere 1-1-48—31-12-48.
Curator, Botanic Gardens	Mrs. A. Hayes ...	Entebbe ...	1- 1-48—31-12-48	Temporary local appointment.

D. Assistant Agricultural Officers

Name		District or Station
Buganda Province—		
E. B. Mayanja	...	Mengo
G. L. Kigundu	...	Mengo
Z. Katerega	...	Bukalasa
Y. M. Kaidzi	...	Mengo
Y. B. Nsubuga	...	Mengo
A. A. Kalanzi	...	Mengo
Y. Yigga	...	Mengo
J. M. Sekimpi	...	Mengo
J. K. Maviri	...	Mengo
J. M. Luzinda	...	Mengo
Y. K. Musitwa	...	Mengo
S. M. B. Mutagwanya	...	Mengo
F. H. O. Mugambwa	...	Masaka
Y. B. Kizza	...	Masaka
Z. K. Sekidde	...	Masaka
A. K. Mulera	...	Mengo
C. F. Sagala	...	Mengo
H. R. Berunga	...	Mubende
E. Kyagaba	...	Mubende
P. S. Bulera	...	Bukalasa
J. N. Kimoimo	...	Bukalasa
J. A. Wandera	...	Entebbe
H. D. Mubiru	...	Kawanda
C. A. Mukibi	...	Kawanda
A. Kamya	...	Kawanda
S. S. Takirambude	...	Kawanda
Eastern Province—		
E. W. K. Wamala	...	Teso
Y. B. Walukamba	...	Busoga
M. S. Makumbi	...	Busoga
E. D. Biruma	...	Busoga
H. W. Muloki	...	Busoga
E. B. Sarulo	...	Mbale
J. G. Wanyoto	...	Mbale
A. G. Kibulo	...	Mbale
B. M. Kagolo	...	Teso
J. E. Onaba	...	Teso
Y. K. Musisi	...	Serere
N. S. M. Kijambu	...	Serere
H. G. Semambo	...	Serere
P. Sempa	...	Serere
G. F. Sagala	...	Ajeluk
Western Province—		
E. J. Kalanzi	...	Kigezi
P. M. Sali	...	Ankole
Z. H. Kwebiha	...	Bunyoro
A. M. Kamese	...	Bunyoro
I. M. Bulikiro	...	Bunyoro
Z. N. Wanyama	...	Kigezi
S. B. Kikule	...	Kigezi
Y. Baguma	...	Toro
Z. K. Banagaija	...	Toro
Northern Province—		
B. Z. Kakoko	...	Acholi
T. K. Otim	...	Acholi
O. L. Lalobo	...	Lango
R. Kachope	...	Lango
E. Rwakaikara	...	West Nile
M. K. Kanyemera	...	West Nile